



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

REVIEWS.

THE AMERICAN BEAVER AND HIS WORKS.*—Mr. Morgan has, in this elaborate work, given us a thoroughly accurate and most entertaining account of an animal whose instincts and habits and economical value have attracted universal attention. The work is illustrated by lithographic plates from photographs of beaver-dams and their surroundings, taken with great pains in the wilderness on the south-west shore of Lake Superior. The frontispiece represents the beaver, and if actually taken from life is drawn in a remarkably ungraceful attitude, that of listening, which shows what a stiff and clumsy animal it must be on land.

A railroad to the iron region opened up "a beaver district more remarkable, perhaps, than any other of equal extent to be found in any part of North America," offering a rare opportunity for a careful study of this creature.

An anatomical chapter by Dr. W. W. Ely, and a geological account precedes the history of beaver-dams, lodges, burrows, canals, meadows, trails, and their means of subsistence, which are followed by chapters on the mode of trapping the beaver, and its psychology.

Besides the common brown beaver, there occasionally occur a black form and albinos. "In form the beaver is short between the fore and hind legs, head heavy and clumsy, and his motions are slow and awkward. He walks with a waddling gait, with his back slightly arched, with his body barely clearing the ground, and his tail dragging upon it;" in the water, however, it is very graceful. It swims chiefly by the webbed hind feet. The fore feet are very small, and, "as they are capable of a very considerable rotary movement, he is able to hold sticks and limbs of trees, and to handle them with great dexterity while cutting them, and also to carry mud and stones." As the beaver lives more often in burrows, his paws are armed with large powerful claws, of which there is an extra one on the second toe of each hind foot, which is peculiar to this animal. It uses its tail to assist variously in swimming and diving, to give an alarm by striking the surface of the water, giving a report that can be heard half a mile; and also as a trowel to "pack and compress mud and earth while constructing a lodge or dam, which he effects by heavy and repeated down strokes." "They pair, and, with their offspring, live in the family relation until the latter attain maturity, when they are forced to leave the parent lodge." But they do not live in villages, though two or more such families inhabit the same pond, and together keep the dam in proper repair. The beaver lives for twelve or fifteen years; carries its young from three to four months, bringing them forth usually in May, "and from two to five and sometimes six at a time."

*The American Beaver and his Works. By Lewis H. Morgan. Philadelphia, 1868, 8vo, pp. xi, 330. With plates and illustrations.

The author states that even the largest dams are the work of a single family carried on year after year, being "maintained for centuries" by constant repairs. Grass Lake dam, the largest one, perhaps, in North America, is fully described. It was two hundred and sixty feet and ten inches in length, and six feet and two inches in vertical height at the centre of the great curve in the middle of the stream, where it slopes thirteen feet on the lower face. It has been supposed to be an evidence of high intelligence that the beaver built its dam so as to curve up stream where the pressure of the water is the greatest, but the author candidly questions whether these curves are the result of accident or design.

Beaver-dams are usually sinuous, but curve either up or down stream, "a downward curve being much more common than the reverse in the large streams. The dam generally curves down in those streams that discharge the largest volume of water, when also the dams are shorter and lower than those on the smaller brooks."

The great dam on Grass Lake, so fully described, "contains upwards of seven thousand cubic feet of solid materials." This dam is also supplemented by an upper and a lower dam to break the force of the stream in freshets; the lower one setting the water back to the depth of twelve or fifteen inches in the great curve. Such structures are remarkable instances of prevision and engineering skill, reminding us of the intelligence shown by the Agricultural Ant of Texas, which, according to Dr. Lincecum, erects mounds on the "pavement" of its fornicary in dry weather, in anticipation of the rainy season!

In excavating this artificial canal for transporting their wood by water to their lodges, beavers evince the most intelligence and "a complicated and extended process of reasoning," though the work is simpler than building a dam, and, like the latter, requires many years of continuous labor.

Like all close and patient observers of the habits of animals, the author believes that animals have a reason different only in degree from that of man. "When a beaver stands for a moment and looks upon his work, evidently to see whether it is right, and whether anything else is needed, he shows himself capable of holding his thoughts before his beaver mind; in other words, he is conscious of his own mental processes." "A canal is not absolutely necessary to beavers any more than such a work is to mankind; but it comes to both alike, as the result of progress in knowledge. A beaver canal could only be conceived by a lengthy and even complicated process of reasoning." In Missouri, where the river banks are steep the beaver constructs no canal, but "slides" which are unknown and not necessary in the Lake Superior region. "Contrary to the common opinion is there not some evidence of a progress in knowledge to be found in the beaver-canal and the beaver-slide? There was a time, undoubtedly, when the canal first came into use; and a time, consequently, when it was entirely unknown." The author hence argues a progression in knowledge, and hence improvement "from a lower to a higher

artificial state of life;" and the possession of a "free intelligence," far above the operation of a blind instinct, by which an animal is, according to Descartes' theory, a "mere machine." And yet the author concedes that the beaver is lower in intelligence than the carnivorous animals, the dog, fox, cats, etc. He ascribes memory, imagination, will, appetites, and passions and an intellect to dumb animals, and cites the case of Dr. Kane's lunatic dog as an evidence that these animals have a *mind to lose*.

TRANSACTIONS OF THE CHICAGO ACADEMY.*—We congratulate the Chicago Academy that this splendid volume, after vexatious delays caused by two fires, has at length appeared. It contains an article on Western Palæontology, by Professor J. H. McChesney, and Descriptions of Sub-carboniferous and Carboniferous Fossils, collected in the Iowa Geological Survey, by Dr. C. A. White and Mr. O. H. St. John. Dr. I. A. Lapham contributes a paper on the Climate of the Country bordering on the Great Lakes. Mr. F. B. Meek has an article on the Geology of the Valley of the McKenzie River, from notes and fossils collected by the late Robert Kennicott; and Dr. William Simpson contributes Illustrations of North American Birds in the Museum of the Academy, illustrated with beautiful colored plates, presented to the Academy by the liberality of several of its members and patrons. The Academy also publishes its octavo "Proceedings," and recently dedicated its new and spacious Museum. Science is carefully fostered in the West; the railroad companies provide the officers of the Academy with free passes and free freightage over their roads, and liberally extend other facilities and courtesies to naturalists engaged in scientific explorations.

POPULAR SCIENCE REVIEW, *January* (London).—M. Trécul has discovered the existence of minute vegetable organisms (*Amylobacteria*) within the starch-cells of *Helianthus tuberosus*, the Jerusalem artichoke. This has by him been regarded as a decided proof of the spontaneous generation of plants. The Review objects that vegetable forms of the lowest type may enter the tissues of animals. There is no more wonder in the fact of a Cholera-fungus in the blood of man than in a *Amylobacterium* in the starch-cell of a *Helianthus tuberosus*.—Professor Rolleston believes that the domestic cat of classical times was probably a Marten.—Herr. C. Claus, of Marburg, has published a paper to prove that the male of *Psyche helix*, a small moth allied to the Silk-worm moth exists. Our readers are aware that the case of *P. helix* was one of the "leading cases" in the history of Parthenogenesis, or development from asexual animals.—M. Donné, who has so long and ably supported the heterodox theory of spontaneous generation, has cried *peccavi*. He admitted that his latest researches, so far from supporting heterogeny, convince him of the accuracy of the views of his old opponent, M. Pasteur.

* Transactions of the Chicago Academy of Sciences. Vol. I, Part I. Royal 8vo. Chicago, 1867. With a map and eighteen lithographic plates and numerous wood-cuts. Price, \$5.00 a part. (This merely covers the cost of publishing.)